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ABSTRACTS

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(Pages refer to the Japanese originals of this volume unless otherwise noticed)

Some New Ingredients of Brown Algae, VIII.

On the brown compounds of phosphorus.

(pp. 1325 ~ 1331)

By K. SIRAHAHA.

(Hokkaido Imperial University, Received Aug. 8, 1938.)

Four brown compounds (α , β , γ and δ) of phosphorus were isolated.

When they were saponified with alkali, (easily producing amine odour) glycerin, fatty acids, a few compounds of phosphorus, and unvolatile base (?) were produced with large amounts of acidic brown pigment. But they did not produce sugar by hydrolyzing with dilute acid. They had the same components as if they were phosphatides.

Brown pigments contained about 1.4% of pyrrol nitrogen and they had a reducing action for Fehling's solution. And the phloroglucin reaction by kali fusion was also active. The brown pigment seemed like a substance derived from chlorophyll or tannin. However, the original brown substance behaved as a lipid.

On the Relation between the Nitrogen Compounds of various Seeds of Crops and the Diastatic Power of their Malts.

Part III. Studies on Glutinous and Non-glutinous Rice.

(pp. 1332 ~ 1334)

By Hideo KATAGIRI and Narataro MUGIBAYASHI.

(Agr. Chemical Laboratory, Kyoto Imperial University; Received July 29, 1938.)

Experiments were carried out with the seeds of four species of non-glutinous and of two species of glutinous rice.

During the germination, glutelin and hordein nitrogen were always decreased

while total soluble, proteose-peptone, especially non-protein nitrogen were increased. The fluctuation of albumin and globulin nitrogen varied with the species.

The activity of maltase and liquefying power of germinated seeds were both found to be low, viz., nearly the same as those of peas (see Part II).

Very different (nearly five times) saccharifying powers of the germinated seeds were observed with the species, and any parallel relation was not found between saccharifying and liquefying powers nor the activity of maltase.

It is interesting to point out that the saccharifying power of the germinated seeds could be estimated from the amount of albumin nitrogen of ungerminated seeds including glutinous and non-glutinous rice, as was already suggested with the seeds of kaoliang and mung beans (see Part I and II).

Studies on Vitamin C. (II)

On the Variation of the Vitamin C Content in some Fruits.

(pp. 1335~1340)

By Hisateru MITUDA.

(Laboratory of Nutritional Chemistry, Kyoto Imp. University, Received July 26, 1938.)

There is no need to say that the various vitamin contents in natural products increase and decrease with the difference of the internal and external conditions of the fruit.

It is exactly the same with vitamin C.

At one time, Tomiji Matuoka⁽¹⁾ studied the effect of light upon the production of vitamin C during germination of the seed.

According to Feller's⁽²⁾ and Batchelder and Overholsen's⁽³⁾ experiments on apples, it is an established fact that vitamin C is more completely synthesized in apples and the parts of them exposed to the sun, than in those in the shade.

The writer has studied the relation between the sunlight and the vitamin C content in pears, persimmons and oranges, and found that the vitamin C content of the fruits is in proportion to the quantity of the sunlight received during ripening.

In other words, the fruits which ripened in sunny places, contained more vitamin C than those which ripened in shady places.

I believe this fact is of much benefit, not only to scientific researches, but also for practical use.

In conclusion the writer must express his sincere thanks to Prof. Dr. K. Kondo for his sympathetic guidance and encouragement throughout the whole of the writer's studies, and to Prof. Dr. I. Namikawa for kindly supplying the sample.

Literature

- (1) Tomiji Matuoka: *Memoirs of the College of Agr. Kyoto Imp. University*, **9** (1930), **24** (1932), **35** (1935).

(2) Fellers: J. Agr. Research., 46 (1933), 1039.

(3) Batchelder and Overholser: J. Agr. Research, 53 (1936), 547.

(July 9, 1938.)

On the Formation of Ascorbic Acid from Mannose in Plants and in Animal Bodies. III.

(pp. 1341~1342)

By Tetutaro TADOKORO and Keizō ITŌ.

(The Hokkaido Imperial University, Received Aug. 27, 1938.)

On the Retting of Vegetable Fibre Materials.

Part VI. The Selection of useful Aerobes for the
Bacterial Retting of Hemp Fibre Materials.

(pp. 1343~1347)

By Hideo KATAGIRI and Tosio NAKAHAMA.

(Agr. Chemical Laboratory, Kyoto Imperial University and
Kanebo Silk Factory; Received Sept. 2, 1938.)

More effective retting in separating pectin from the fibre bundles and of increasing white content of the fibre was attained by the aerobic process when it was compared with the natural retting of hemp fibre materials.

From the retting vat, twelve strains of aerobic bacteria were isolated, and their morphological characteristics were investigated.

When pure fermentations of hemp fibre materials were carried out with these bacteria isolated as above, one strain (No. 4) of coccus and one strain (No. 10) of bacillus were selected as the most useful organisms, since with each of these two strains, non-fibrous substances including pectin, mannan, galactan and crude protein were always remarkably removed from the fibre bundles.

On the Retting of Vegetable Fibre Materials.

Part VII. The Characteristics of the useful Bacteria
for the Aerobic Retting of Hemp Fibre Materials.

(pp. 1348~1352)

By Hideo KATAGIRI and Tosio NAKAHAMA.

(Agr. Chemical Laboratory, Kyoto Imperial University and
Kanebo Silk Factory; Received Sept. 2, 1938.)

One of the useful aerobes (see Part VI) was classified as a new species as *Micrococcus cannabis*, since the characteristics of the bacteria were found not to be

the same as those of *Micrococcus subcitreus*, Migula or *Micrococcus luteolus*, Irwin and Harrison, in the reduction of nitrate, formation of surface film on liquid cultures and for the optimum temperatures of multiplication.

The other useful aerobe was found to reveal a similar nature to *Bacillus subtilis*, Cohn. However, glycogen was not found in the bacterial cells, milk was not changed, hydrogen sulphide was not produced, and the production of acid from glucose or sucrose was not observed using this bacteria.

It was therefore concluded that the bacteria was again a new species and named *Bacillus cannabis*.

Nutritional Chemistry of Flowers. (Part II)

Compositions of Cauliflowers and Vitamins in Flowers of Double Cherry-Blossoms, Rape-Seed Flowers and Cauliflowers.

(pp. 1353~1363)

By Sakae SHINANO and Masuji MORIMOTO.

(Laboratory of Nutritional Chemistry, Kyoto Imp. University. Received Aug. 27, 1938.)

1) The general compositions of the flowers of double cherry-blossoms, rape-seedflowers and cauliflowers were analysed with the result that these flowers were found to consist chiefly of a large amount of nitrogenous substances and carbohydrates besides 80~90% of water.

2) The nitrogenous substances and carbohydrates in the cauliflowers were studied, and it was shown that the greater part of the nitrogenous substances were of different natures from the seedprotein. Moreover, we have proved, by the osazone test, the presence of glucose and fructose in the water soluble part of the cauliflowers.

3) The flowers of double cherry-blossoms, rape-seedflowers and cauliflowers were used as vitaminsources in the feeding of albinorats, and it was proved that these flowers contained a suitable amount of vitamin A, B-complex and E-active substance.

We have assumed, according to the results of the feeding experiments, that the content of vitamin B in these flowers occurred in the following order: Cauliflowers > Flowers of double cherry-blossoms > Rape-seedflowers.

(1938, August 24)

Chemical Studies on Japanese Coccidae. (XX.)On Carbohydrates and Waxes of *Tachardina theae* Green et Mann.

(pp. 1364~1370)

By K. KAWANO and R. MARUYAMA.

(Laboratory of Ohsaka Factory of Sankyo Co. Ltd., Received Sept. 5, 1938.)

Researches on the Electrolytic Reduction Potentials of Organic Compounds.—Part 27.

The electrolytic reduction potential of furfural.

(pp. 1371~1374)

By Isamu TACHI.

(Agricultural Chemical Institute, Kyoto Imperial University, Received Sept. 5, 1938.)

- (1) The standard electrolytic reduction potential (π'_0) and the saturation current of furfural were determined in various pH solutions by the polarographic method.
- (2) The saturation current changed with the pH values of the electrolytic solutions and showed a maximum value in the case of pH=8.0.
- (3) It was suggested from the polarograms that the reduction of furfural took place with two stages continuously in the pH range from 6 to 8.
- (4) The π'_0 -pH curve of furfural consisted of three linear parts, of which inclinations were $d\pi'_0/dpH = -0.07$ in the pH range from 1 to 6, $d\pi'_0/dpH = -0.03$ in the pH range from 7 to 10 and $d\pi'_0/dpH = 0.0$ in higher pH range than 10.
- (5) When the analysis of furfural is carried out by the polarographic method, it is preferable that the qualitative analysis should be carried out with a strongly alkaline solution owing to a constant value of π'_0 , and the quantitative analysis should be carried out with a solution, of which pH value is 8, and if the content is very large, strongly acidic as well as strongly alkaline solutions are available.

Studies on the Amylo-Process for the Production of Alcohol from Potatoes. (I)

(pp. 1375~1386)

By Shinji DOI and Rikizo TAKAHASHI.

(Tokyo Imperial University, Received July 17, 1933.)

Biochemical Investigation of Mosaic Disease of Tobacco Plants. IV.

On Oxydase, Peroxydase and Amylase in the Leaves of
Healthy and Mosaic Plants.

(pp. 1387~1396)

By Y. OKUDA, K. KATAI and T. HIBI.

(Department of Agriculture of Kyusyu Imperial University, Fukuoka, Received Aug. 24, 1938.)

Some New Ingredients of Brown Algae, IX.

A brown pigment.

(pp. 1397~1403)

By K. SIRAHAMA.

(Hokkaido Imperial University, Received Aug. 8, 1938.)

A large amount of brown pigment was produced by saponification of the brown compound δ which was mentioned in Report VIII. It had the same nature as the other pigments which were obtained by saponification of brown compounds α , β and γ . In this case, further purification was made and it was separated into three substances: ether soluble phytochlorine like substance, alcohol soluble substance (a) and insoluble (b).

The pigment (b) contained somewhat more oxygen than (a) and the ash content of (a) was larger than (b). The ash was mainly magnesium and a little sodium.

When pigment (a) added hydrogen, its alcohol solution diminished the viscosity of the solution. Pigments (a) and (b) had also physiological properties: they accelerated the development of moulds and inhibited that of lactobacillus.

The Composition of Soy-bean Oil Residue.

(pp. 1404~1409)

By Shigeki MORI.

(Kondo Laboratory, Chemical Institute, Kyoto Imperial University, Received Sept. 19, 1938.)

Statistic Studies of Soils. (II)

(pp. 1410~1412)

By Dr. Hideo MISU.

(Agricultural Experiment Station, Government General of Tyosen, Received June 24, 1938.)

Studies on the Nutritional Chemistry of Cuttle Fishes. (I)

(pp. 1413~1422)

By Yasu HATAKOSI.

(Kondo Laboratory, Chemical Institute, Kyoto Imperial University, Received Sept. 20, 1938.)

Studies on the Utilization and Digestion by Silkworms of the Carbohydrates contained in Mulberry Leaves. (Part V)

The Influence on the Activity of Digestive Enzymes of Silkworms when bred on Mulberry Leaves to which Cane-sugar was added in different Proportions.

(pp. 1423~1425)

By K. KATO

(The Sericultural Experiment Institute of Gifu Prefecture, Received Oct. 1, 1938.)

As the results of experiments on the influence on the digestive enzymes of silkworms we found that the activity of amylase was almost unchanged and the activities of invertase in the stomach membrane and protease were influenced.

Effect of Heating on Yeast Glutathion.

(Biochemical Studies on Glutathion. The Sixth Report.)

(pp. 1426~1432)

By Masayoshi OGAWA.

(Department of Nutrition, College of Medicine, Nippon University.

Received Oct. 4, 1938.)

The author has already reported as to the biochemical studies on glutathion. In the present communication the author determined the glutathion content of bee yeast and studied the effects of heating on yeast glutathion. Method of Okuda

Table I. GSH crystallized as cuprous salt from yeast.

Hours heating	Heating condition	dry state (100°C)	wet state (88°C pH. 6.0)
0.		100.0	100.0
1.		—	10.3
5.		—	9.6
7.		97.3	—
10.		—	0.
23.		27.5	—
41.		0.	—

and the author for the determination of glutathion, and method of Hopkins for the precipitation of cuprous glutathion were used, with the following results. (Table I)

From the above results, in the dry state yeast glutathion seems to exist in fairly stable condition for the heating effect, but in the wet state it seems to be easily destroyed.

Table II. The determination value of yeast glutathion which was boiled with water for several minutes.

Minutes boiling	Glutathion determined (mg %)					
	GSH		GS.SG		Total	
0.	409	100	347	100	756	100
1.	567	138.6	268	77.2	835	110.4
5.	567	138.6	284	81.8	851	112.5
10.	567	138.6	276	79.5	843	111.5
15.	567	138.6	260	74.9	827	109.3
20.	509	124.4	200	57.6	709	93.7

The determination value of glutathion of the yeast which was boiled with water for several minutes (1~5) was increased in some degree. The increase is believed to be due to the liberation of glutathion from a compound which is soluble in water but insoluble in acid (S. S. A.).